

# The Effect of Menstrual Health Education Adopting the Peer Education Method with the Participation of Mothers on Adolescents' Menstrual Health Behaviors: a Clinical Trial

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## ABSTRACT

**Background & aim:** Menstrual health is a major part of adolescent health; nonetheless, the majority of girls do not have sufficient knowledge of menstrual changes. Therefore, current study aimed to assess effect of menstrual health education adopting the peer education method with the participation of mothers on adolescents' menstrual health behaviors.

**Methods:** This randomized clinical trial was conducted on 60 students with regular menstruation in two groups. Two high schools in Mashhad were selected by drawing lots as a random block. In intervention group, at first 10 students received the educational content and then were asked to train 4-7 of their classmates. Mothers of subjects received two 2-hour sessions with the same content. Control group received routine education by a health educator. Data were collected by a valid, reliable self-structured questionnaire of menstrual health behaviors, before intervention and also after the end of the first and second menstrual cycles and were analyzed in SPSS software (version 16) using Mann-Whitney, Friedman, and independent samples t-test.

**Results:** Based on the results, mean score of menstrual health behaviors significantly increased in the two groups ( $P < 0.001$ ). However, mean score of menstrual health behaviors in intervention group was significantly higher, compared to the control group (after the end of the first and second menstrual cycles) ( $P < 0.001$ ).

**Conclusion:** peer education with participation of mothers was more effective in enhancement of adolescents' menstrual health behaviors, compared to the traditional routine method. It is recommended that health professionals apply participatory teaching methods for education of health issues, including menstrual health.

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## Introduction

Menstrual health is a major part of adolescent health (1); nonetheless, the majority of girls do not have sufficient knowledge of menstrual changes and incorrect information they obtain from unreliable source brings them serious problems (2). Lack of awareness and proper

health information during this period may predispose a person to inflammatory pelvic infection and its associated complications, such as infertility, which in turn, result in numerous economic and social problems(3). In their study, Mobin et al. (2013) found that 53% of girls did

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not bath during menstruation, and 37% did not pay attention to cleaning after each toilet (2). In many cases, they are mostly encouraged by their mothers to do (2). A study in Pakistan demonstrated that 50% of girls were discouraged from taking shower during menstruation by their mothers (4).

Family is the primary social unit that performs a key role in educating and transmitting health information and behaviors to adolescents, and among family members, mothers hold the most influential position (5). In a study conducted by Mobin et al. (2013), girls identified mothers and relatives as the most important and the best source of information (75.5%), and 96% of the respondents highlighted the need for menstrual health education(2). Along the same lines, Alimoradi et al. (2013) referred to the lack of appropriate sources of information for adolescents, including mothers (6). The level of clients' awareness can be raised by proper training tailored to their needs, and they should be educated to take care of themselves(7).

Different educational methods can be used to train girls on menstrual health. The related studies have pointed to better outcomes of taking an interactive approach to learning and training (1, 8). In this regard, one of the methods of interactive training is peer education which can be an effective method for menstrual health education considering the adolescence and important role of friends and peers in this period. The results of a study conducted by Parsa et al. (2014) were indicative of the greater impact of peer education on the improvement of girls' menstrual health. This method enhances people's thinking and creativity and leads to the full participation of individuals in the planning, implementation, and even assessment stages of education (1). On the other hand, the implementation of training programs with traditional approaches is inefficient, lacks the needed dynamics, and does not promote students' active participation (7). A large percentage of Iran's population are adolescents (in the age group of 10-19 years) who are reportedly presented with different menstrual problems (6), and mothers perform a peculiar role in this regard. Moreover, the efficiency of the latter method in educating adolescents

remains unclear (7), and no study has used this educational approach with the participation of mothers in the education of menstrual health. In light of the aforementioned issues, the present study aimed to assess the effect of menstrual health education adopting the peer education method with the participation of mothers on adolescents' menstrual health behaviors.

## Materials and Methods

This randomized clinical was conducted in 2018. The research population was high school female students in Mashhad. To achieve the greater homogeneity of selected high schools, a single district was chosen. From district 6, two high schools were selected by drawing lots as a random block. Due to the possibility of information dissemination between the two groups, the random allocation was not possible. Therefore, each high school was assigned to one of the study groups by drawing lots. Two classes (one grade-7 and one grade-8) were selected from the high schools. All the subjects who met the inclusion criteria were enrolled in this study.

The sample size was calculated at 29 subjects in each group using the results of a pilot study on 20 subjects (10 cases from each group) using mean comparison formula ( $N = \frac{(Z_{1-\alpha/2} + Z_{1-\beta})^2 (S_1^2 + S_2^2)}{(X_1 - X_2)^2}$ ) with 95% confidence interval and 80% test power based on the average score of health behavior. However, 32 cases were assigned to each group considering 10% sample attrition. Four subjects were excluded from the study (two cases in the intervention group due to the absence of their mothers in the classroom, and two subjects in the control group owing to not having menstrual bleeding during the study). Finally, the analysis of data was performed on 30 participants from each group.

Inclusion criteria entailed: 1) Iranian nationality, 2) residing in Mashhad, 3) willingness to participate in the study, 4) being single, 5) having menstrual cycles, 6) physical and mental health, 7) living with mother, 8) not experiencing a tragic event during the past six months (e.g., death of first-degree relatives), and 9) not following a specific diet. On the other hand, the exclusion criteria were as follows: 1) absence in training educational program for more than one session, 2) lack of access to the

student, 2) unwillingness to continue participation, 3) not having menstrual bleeding throughout the study, 3) attending menstrual hygiene training classes during the study.

The sampling was carried out from October to December 2018 after obtaining permission from the Regional Medical Ethics Committee of Mashhad University of Medical Sciences, coordinating with education organization, describing the research project for school administrators, obtaining consent from subjects individuals and their mothers, and assuring them of the confidentiality of their responses.

The data collection tools included a form for assessing the inclusion and exclusion criteria for selecting subjects, a general profile questionnaire for participants, and a researcher-made questionnaire on menstrual health behaviors. The questions in this questionnaire are based on numerous studies, such as Takhre et al. 2015(9), Adika et al. 2013(10), Haque et al. 2014(11), Mobin et al. 2013(2), Shakiba et al. 2016(12).

To determine the validity of the researcher-made questionnaire, the Content Validity Index (CVI) and Content Validity Ratio (CVR) methods were used. The questions accompanied by a questionnaire on relevance, importance, and transparency (necessity, communication, simplicity, and clarity) were provided to 10 faculty members of Mashhad nursing and midwifery faculty. Thereafter, based on the formulas, CVI and CVR were calculated, and the minimum coefficient was obtained at 0.7. The items below 0.5 were deleted, items within 0.05-0.65 were corrected, and those higher than 0.7 were verified. Finally, the CVI and CVR of the entire tool was calculated at 0.8 and verified. Furthermore, the reliability of this questionnaire was confirmed rendering Cronbach's alpha coefficient of 0.78.

The questionnaire included such items as personal health, changing sanitary napkins on a daily basis, the hygiene of the genital area, nutrition, using different types of food groups during menstruation, physical activity, exercise and rest, and attending sports classes during menstruation, pain relief, acupressure, relaxation techniques, sedative, psychological support, and relationship with family members during menstruation. The 34 items in this

questionnaire were scored on a 4-point Likert scale ranging from always=3, usually=2, seldom=1, never=0. The scores of each item in each area were separately collected; finally, higher scores were regarded as better health behaviors.

Firstly, at the prayer room, and after coordination with the student's manager and teacher, the students of two classes were provided with explanations about the aims of the research. Subsequently, the students were given consent letters to bring back the next session. The selection of all students eligible for the research was performed if they wished to participate in the research after receiving written consent from the students and their mothers. At the next meeting, the criteria for entering the study were completed by the researcher in a separate class using a form of assessing inclusion and exclusion criteria for selecting research subjects. Thereafter, the general profile questionnaire was provided to eligible students and completed under the supervision of the researcher. At the same session, before the intervention, a pre-test was conducted by the researcher to investigate menstrual health behaviors. If the students had a problem in understanding questions, they were answered. The educational content included generalizations on menstruation, female genital anatomy, personal hygiene, nutrition, physical activity, pain relief, and psychological support about menstruation.

In peer education methodology, firstly, 10 subjects (5 from the 7th grade and 5 from the 8th grade) from active and interested students of each class on the basis of characteristics (approved by the teacher and other classmates for training, volunteering, and high grade) were selected to educate their peers. The content of the training was described by the researcher in two 45-60 minute sessions on two consecutive days. The researcher answered their questions about educational materials. Subsequently, three trained students of each class, who received the highest score from the menstrual health behaviors questionnaire, were selected as educators and were asked to provide educational content in break times to their 4-7 classmates (chosen by drawing) within a month. Moreover, they were provided with a booklet

containing educational content to refer to if they needed to remind a particular subject or answer other students' questions. During the intervention, a separate training program with the same educational content was held in the form of two 2-hour sessions within a two-week interval for mothers (in the absence of students). These sessions were conducted using lecture methods, question and answer, as well as discussion. In these classes, mothers' questions about menstruation were answered, and they were asked to use what they learned in training their daughters.

The control group only received the routine instruction of secondary schools (with similar educational content) conducted by a health instructor. At the end of the study, a questionnaire was filled out to examine the

exclusion criteria by interview, as well as question and answer with students of the two groups. Upon the completion of the first and second menstrual period, the menstrual health behavior questionnaire was completed again by girls in both groups. The data were analyzed in SPSS software using the Kolmogorov-Smirnov test, Chi-square, Mann-Whitney, independent t-test, Friedman, and two-way analysis of variance with a 95% confidence interval.

### Results

The two groups did not significantly differ in terms of mean age and mean age of first menstruation. Students were homogeneous regarding educational level, as well as the maternal and paternal educational levels (Table 1).

**Table 1.** Demographic characteristics of 7th and 8th-grade female students in two groups of control and intervention

Demographic characteristics	Intervention group (N=30)	Control group (N=30)	statistical test
<b>Age (years)</b> mean±Standard deviation	0.5±13.8	0.6±13.6	P=0.096
<b>First menstrual age (years)</b> mean±Standard deviation	0.7±11.9	0.9±11.7	P=0.352
<b>Educational level</b> (Percent) number			
seventh grade	17 (56.7)	16 (53.3)	p= 0.602
Eighth Grade	13 (43.3)	14 (46.7)	
<b>Mother's education</b> (Percent) number			
Elementary	2 (6.7)	1 (3.3)	P=0.097
High school	3 (10.0)	3 (10.0)	
Diploma	19 (63.3)	13 (43.3)	
University	6 (20.0)	13 (43.3)	
<b>Father's education</b> (Percent) number			
Elementary	1 (3.3)	0 (0/0)	P=0.105
High school	3 (10.0)	2 (6.7)	
Diploma	16 (53.3)	13 (43.3)	
University	10 (33.3)	15 (50.0)	

In the pre-intervention stage, the result of the Mann-Whitney test did not show a significant difference between the mean score of menstrual health behaviors between the two groups (P= 0.773).

At the end of the first menstrual cycle (P< 0.001) and second menstrual cycle (P< 0.001), the result of the Mann-Whitney test demonstrated a significant difference between

the mean score of menstrual health behaviors between the two groups. The results of the Mann-Whitney test indicated a significant difference between the two groups regarding the changes in the mean score of the menstrual health behaviors at end of the first menstrual cycle, in comparison to before the intervention (P<0.001).

Within-group analysis in the intervention group using the Freidman test showed a significant difference in the mean score of menstrual health behaviors in three measurement times (P<0.001). In addition, the post hoc analysis demonstrated that the mean score before the intervention was significantly

different from those mean scores obtained at the end of the first menstrual cycle (P<0.001) and second menstrual cycle (P<0.001). Nevertheless, no significant difference was detected between the mean scores reported at the first and second menstrual cycles (P=0.984)

**Table 2.** Mean and standard deviation of menstrual health behaviors score before the intervention, as well as the end of the first and second menstrual cycle of seventh and eighth-grade female students in the two groups

Group	Intervention group (N=30)	Control group (N=30)	Intergroup test result
Menstrual health behaviors score	mean±Sd	mean±Sd	□Sd±mean
Before the intervention	9.7±44.1	8.4±45.1	*P=0.773
End of the first menstrual cycle	7.3±84.6	1.0±51.5	* P< 0.001
End of the second menstrual cycle	7.5±93.2	1.0±52.2	*P< 0.001
Changes at the end of first menstrual cycle, compared to before the intervention	7.7±40.4	5.4±6.4	**P< 0.001
Changes at end of the second menstrual cycle, compared to before the intervention	8.1±49.1	5.9±7.1	**P< 0.001
Changes at end of the second menstrual cycle, compared to the end of the first menstrual cycle	3.5±8.7	1.6±0.7	*P< 0.001
□ Within-group analysis	***Chi <sup>2</sup> =4.6 df=2 p<.001	***Chi <sup>2</sup> =3.1 df=2 P=0.026	

Mann Whitney test

\*\*Independent t-test \*\*\*Friedman test

Within-group analysis in the control group using the Freidman test showed a significant difference in the mean score of menstrual health behaviors in three measurement times (P<0.026). Post hoc analysis pointed out that the mean score before the intervention was

significantly different from those mean scores obtained at the end of the first menstrual cycle (P<.018) and second menstrual cycle (P<.014). However, there were no significant differences between the mean scores reported at the first and second menstrual cycles (P=0.746; Table 2).

**Table 3.** Results of two-way ANOVA regarding the effects of group and demographic variables on menstrual health behaviors score at the end of the second menstrual cycle of the seventh and eighth-grade female students

	Main effect (p)	Group effect (p)	Variable effect (p)	Interaction effect (p)
Age	<0.001	<0.011	0.341	0.319
First menstrual age	<0.001	<0.21	0.108	0.154
Level of Education	<0.001	0.001	0.159	0.822
Mother's education	<0.001	0.001	0.973	0.317
Father's education	<0.001	0.002	0.973/	0.506

Two-way analysis of variance did not show any significant relationship between demographic characteristics (e.g., age, first menstruation age, student's education level, maternal educational level, paternal educational level) and menstrual health behaviors score ( $P > 0.05$ ; Table 3).

## Discussion

The present study aimed to assess the effect of menstrual health education adopting the peer education method with the participation of mothers on adolescent menstrual health behaviors among high school students in Mashhad. The obtained results demonstrated that menstrual health education in both forms (traditional and peer approaches) was effective in students' menstrual health behaviors; nonetheless, the peer education method with the participation of mothers had a more profound impact on the improvement of menstrual health behaviors in adolescent girls. Consistent with the results of the study conducted by Parsa et al. (2014)(1), the students in the current study referred to their mother as the main sources of information about menstruation. Nevertheless, a study performed in Turkey showed that friends were the most important source of information about menstruation(13). This result points to the importance of peer groups in menstrual health education; on the other hand, this difference can be ascribed to variations in cultures and geographical locations.

In agreement with the results of the study by Parsa et al. (2014), the comparison of the mean of menstrual health behaviors before and after routine school education (conducted by a health educator in the control group) pointed out that the level of performance significantly increased. Nevertheless, the results of the studies conducted by Ostovar et al. (2012) and Taghdisi et al. (2011) were not in accordance with the findings of the present study regarding the lecture group(1, 7, 14). This discrepancy can be attributed to time conditions, raising students' awareness, type of training, as well as differences in health educators and researchers.

In the present study, the comparison of the mean of menstrual health behaviors before and after the intervention pointed out that the level of performance significantly increased adopting peer education, confirming the studies

conducted by Parsa et al. (2014), Shirzadi et al. (2014), and Ostovar et al. (2012)(1, 4, 7). The students' menstrual health behaviors were not satisfactory. These results were similar to the findings reported by Dabiri et al. (2008), Shirzadi et al. (2014), also Parsa et al. (2014)(1, 4, 15) highlighting the need and importance of menstrual health education for teenage girl students.

Furthermore, in the current study, peer education was associated with mothers' participation, teaching them, as well as question and answer, which could potentially improve menstrual health behaviors in this group. Based on some studies and the present study, female students referred to their mothers, teachers, and friends as the most important sources of information on menstrual health (1, 6). In this regard, a study carried out by Shahhosseini et al. (2010) also indicates that from adolescent girls' point of view, family factors, including parents' awareness of evolutionary changes in adolescence, play a key role in their health (16). Mothers, teachers, sisters, peers, health workers, school health care providers, and media are teenagers' information resources. The close relationship between mother and daughter can motivate girls to use their mothers as the main source of information on menstrual health. On point worth noting is the shame and embarrassment among girls, mothers, and health educators regarding puberty and menstrual education. Perhaps this is why the results of the study by Maleki et al. (2008) suggested that education given by nurses is more effective than education provided by mothers and teachers and leads to the improvement and promotion of adolescent girls' health behaviors(17). However, the results of a review study by Alimoradi et al.(2014) regarding the participation of mothers in education are consistent with the present study(6). Therefore, more attention should be devoted to mothers who are the first to provide girls with health information.

In the present study, the findings showed that both methods of routine education and peer education improved the menstrual health behaviors of students. Nevertheless, the peer education method proved to be more effective than the routine method in the enhancement of

menstrual health behaviors of female students. This finding was in line with those reported by Parsa et al. (2014) who reported that peer education was more effective than the routine method; however, it was not consistent with the results of a study conducted by Taghdisi et al. (2011)(1, 14). Along the same lines, the findings of a study conducted in India also indicated that an interventional approach to the education of menstrual health in girls caused remarkable changes in their knowledge and practice(18). The participation of all students in teaching-learning, as well as the use of peer groups, as compared to the routine training group, can lead to the better transfer of educational content. It is noteworthy that in the current study, psychological characteristics and personality traits of individuals affected the learning of the provided education and responding to the items of the questionnaire, and it was not possible to fully control this effect.

## Conclusion

As evidenced by the results of the present research, the peer education method with the participation of mothers exerted a more profound impact on the improvement of menstrual health behaviors of adolescent girls, as compared to the routine traditional method. Therefore, it is suggested that educational planners use this educational method to teach puberty issues, including menstrual health. Moreover, mothers' knowledge regarding adolescent health issues should be enhanced in order to further improve adolescents' menstrual health behaviors. Furthermore, the findings highlighted the necessity of the provision of adequate training to adolescent girls about health issues, including menstrual health.

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## Conflicts of interest

The authors declare no conflicts of interest.

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